



CHESAPEAKE REGIONAL INFORMATION SYSTEM FOR OUR PATIENTS

## Care Coordination Tools and Services Current and Future Capabilities

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7160 Columbia Gateway Drive, Suite 230  
Columbia, MD 21046  
877.952.7477 | [info@crisphealth.org](mailto:info@crisphealth.org)  
[www.crisphealth.org](http://www.crisphealth.org)



# Current Tools and Services



# Clinical Query Portal

- The query portal allows credentialed users to search the HIE for clinical data.
- All 47 acute care hospitals in Maryland and 6 of 8 DC hospitals share clinical data.
- There are currently over 110,000 queries per month.
- 10 hospitals have enabled “single sign-on” connectivity to the portal enabling single-click access to data in CRISP.

The screenshot displays the Clinical Query Portal interface for a patient named Jenny K Rollins. The interface includes a navigation menu on the left with options like 'Patient Actions', 'Download CCD', and 'Share Summary'. The main content area shows patient information, including name, gender, date of birth, and address. Below this, there are several tabs for different types of data: 'Summary', 'More Patient Information', 'Patient Groups', 'Patient Documents', and 'PMP Gateway'. The 'Summary' tab is active, showing a list of 'Laboratories (12)', 'Imaging (3)', 'Medications (5)', 'Ambulatory Encounters (1)', 'Documentation (1)', and 'Vitals (2)'. Each section contains a table with columns for Date, Name, and Source. The 'Laboratories' section shows various blood test results. The 'Imaging' section shows X-ray results. The 'Medications' section shows a list of drugs and their sources. The 'Ambulatory Encounters' section shows a single encounter. The 'Documentation' section shows an operative report. The 'Vitals' section shows blood pressure and BMI measurements.

- Types of data available:
- Patient demographics
  - Lab results
  - Radiology reports
  - **Maryland PDMP Meds Data**
  - Discharge summaries
  - History and physicals
  - Operative notes
  - Consult notes



# Clinical Query Portal - Single Sign-on

**Single Sign-On (SSO)** is an approach to enable faster and more efficient access to the query portal through the EHR.

**Inpatient Summary**

Diagnoses (10)  
Selected visit  
Acute Pain (338.1)  
Bile duct stricture (576.2)  
Gout, Unspecified (274.9)  
Hypertrophy (Benign) of Prostate without Urinary Obstruction and Other Lower Urinary Tract (Luts) (600.00)  
Malignant Neoplasm of Extrahepatic Bile Ducts (156.1)  
Obstruction of Bile Duct (576.2)  
Obstruction of Bile Duct (576.2)  
Tobacco Use Disorder (305.1)  
Unspecified Essential Hypertension (401.9)  
Unspecified Glaucoma (365.9)

Problems (16)

Allergies/Intolerances (1) +

Medications & Fluids Administered +

Home Medications (12) +

Immunizations (0)

D/C Follow-up (1) +

Patient Status Orders

Vital Signs  
Last 36 hours for the selected visit  
No results found

Measurements and Weights (4)  
Selected visit

	Latest	Previous	Change
Weight Dosing	60 kg	60 kg	0 kg
Height/Length Dosing	157 cm	157 cm	0 cm
BSA Dosing	1.6 m2	1.6 m2	0.0 m2
Body Mass Index Dosing	24.34 kg/m2	24.34 kg/m2	0.00 kg/m2

MedStar HIE  
Note: No new data has been received for this patient in the last 30 days.  
Click Here to view patient in MedStar HIE  
Click here for Help/Training

CRISP HIE  
Click here to access CRISP  
Click here to view CRISP data sources  
For CRISP support, call 877-952-7477

Outstanding Tests, Exams (0)  
Selected visit

By securely sending a local user's credentials and the current patient medical record number (or other demographics), CRISP can send the user directly to the patient summary screen.

**CRISP**

Patients  
Patient x

CRISP Production

Summary More Patient Information

Laboratories (100+) Other Orders (0)

Date	Name	Source
Sep 18	CA19-9	MS_GUH
Sep 18	GFR	MS_GUH
Sep 18	CMP	MS_GUH
Sep 18	CBC w/ Diff	MS_GUH
Apr 07	CMP	MS_GUH
Apr 07	LAC	MS_GUH

Ambulatory Encounters (17) More

Date	Type	Source
Sep 18	ROUTINE ELECTIVE	MS_GUH
Sep 18	ROUTINE	MS_GUH

Imaging (0)  
No Imaging to display

Medications (0)  
No Medications to display

Documentation (0)  
No Documentation to display

Allergies (1)

Allergen	Reactions	Reported
NO KNOWN Allergies	UNK	Mar 10



# Encounter Notification Service – Current Capabilities

CRISP currently receives Admission Discharge Transfer messages in real-time from:

- All Maryland Acute Care Hospitals
- 6 of 8 D.C. Hospitals
- All Delaware Hospitals



Through ENS, CRISP generates **real time hospitalization notifications** to PCPs, care coordinators, and others responsible for patient care.

## **Important Current Capabilities**

1. Full Continuity of Care Documents (CCDs) are also routed through ENS to subscribing providers who elect to receive them to support transitions of care.  
*10 Hospitals currently send CCDs to CRISP*
2. Hospitals can “auto-subscribe” so they can be alerted when one of their past discharges is being readmitted within 30 days. This same capability allows the receiving hospital to be notified when a patient arriving at their facility had been discharged from another facility within the past 30 days.  
*34 hospitals currently auto-subscribe to receive readmission notifications*
3. ENS was recently enhanced to include the ER and IP visits for a given patient with the past 6 months.



# Methods to Receive Notifications

- Currently, ENS recipients can choose to receive real-time or a daily (or twice daily) summaries of the prior 24 hours of hospitalizations.
- Most notifications are sent via CRISP secure direct messaging tool (shown below).
- Some ENS subscribers choose to integrate notifications into their EHR by receiving the notifications in the form of an ADT.

**Example:** Daily summary notification sent as an attachment to CRISP's secure inbox

The screenshot displays the CRISP secure inbox interface. At the top, there is a header bar with the CRISP logo, navigation links (Email, Admin, Invitations), and user information (Downloads, Account, Sign Out, ryan.bramble@crispdirect.org). Below the header, the main content area shows an email from ryan.bramble@crispdirect.org. The email subject is "Fwd: CRISP ENS Summary Notification for Johns Hopkins Co" and the body contains a link to the notification. The email is dated Aug 07, 04:03 PM. The email body includes a section titled "Encounter Notifications" with a sub-header "Encounter Notifications" and a paragraph stating "Please see the attached document for a summary of CRISP ENS Notifications." Below this, there is a section titled "Additional Info:" with a link to "CRISP Query Portal Link" and a paragraph stating "You are receiving this message because you have requested Encounter Notifications from the statewide health information exchange for your patient panel. Any questions/concerns can be sent to: alert.hie@crisphealth.org". At the bottom of the email body, it says "Your participation in ENS is sponsored by Johns Hopkins Hospital". The interface also shows a sidebar with folders (Inbox, Archive, Oo, Sent Items, Drafts, Trash (116), potomac) and a bottom section with "Quick Reply" and "Send" and "Save" buttons.



# Near-term Additional Approaches for ENS

Outside Messages 0 unread, 1 total

From: ENS, User  
Addressed To: Stephen Sisson, MD  
Routed To: Jhoc Internal Medicine Clinical Support Staff  
Context: CRISP Event Notification

Discharge Summary - CareEverywhere, Jackie (50 y.o. Female) As of Jul. 17, 2015

Patient Demographics

Patient Address	Communication	Language	Race / Ethnicity
111 Main St Baltimore, MD 21222	Unknown	Unknown	Unknown / Unknown

Hospital Discharge Diagnosis

Diagnosis Code	Diagnosis Description
X0020	personnel hx of venous thrombosis and

Chief Complaint and Reason for Visit

AdmtReasonCode-Dizziness
--------------------------

ENS PROMPT

Proactive Management of Patient Transitions

Notifications from: LAST 30 DAYS

Search

NAME

Sheri Stanton (85770)

901-030-5837

DOB: 12/24/60  
Address: 714 First Street  
City/State: San Diego, MD  
Race: Asian  
Ethnicity: Unknown

PQP: Abigail Barlett  
NPI: 6414715  
ADD:

MOST RECENT EVENT

Event Date:	7/15/15 4:34 PM
Event Type:	IP Admit
Event Location:	Aria Bucks County Campus
Hospital Service:	LT LEG PAIN/FOOTBALL
Discharge Disposition:	
Discharge to Location:	
Patient Complaint:	HEAD INJ
Admt Source:	Transfer from a hospital

EVENT HISTORY

7/12/15 11:29 PM	Diagnosis: LOW B/P Complaint: HEAD INJ	Aria Frankford Campus	ER	Admit
7/12/15 3:30 PM	Diagnosis: VSA SPAIN ON BOTH SIDES Complaint: HEAD INJ	Aria Frankford Campus	ER	Registration

ENS is in final testing to deliver notifications directly into Epic. Notifications are also currently flowing into other recipient systems in production.

CRISP will also offer an ENS user interface beginning in early October rather than simple spreadsheet via secure email. Users will still have the ability to download the spreadsheet.



# ICN Infrastructure Tools and Services





# Clinical Portal Enhancements



My Results **Patients** Providers Reports Setup Administration

Patient » Rollins, Jenny K

## Patient Actions

- Back to List
- Download CCD
- Download CCDA CCD
- Download Summary PDF
- Share Summary
- Send Summary to Me
- View Clinical Messages
- Configure Layout
- Request Advance Directive
- Request Med History

**Rollins, Jenny K** Female 12/20/1978 (36 yrs)  
2985 Oxford Court, Columbus, MD 39701

[Care Alert Available! \(Click to View\)](#)  
[Click to View Full Care Profile](#)

**ENS Subscribers to this Patient**  
Johnson Family Medicine – 410-555-7676

Summary More Patient Information Patient Groups Patient Documents PMP Gateway

### Laboratories (12)

Date	Name	Source
06/11/2014	TOTAL CHOLESTEROL...	CGH
03/30/2013	CBC W/ AUTO DIFF	CGH
03/30/2013	MAGNESIUM	CGH
03/30/2013	CHEM7	CGH
03/30/2013	DIFFERENTIAL - AUTO	CGH
03/28/2013	CBC W/ AUTO DIFF	CGH
03/28/2013	DIFFERENTIAL - AUTO	CGH
03/28/2013	CHEM7	CGH
03/28/2013	PTT SCREEN	CGH
03/28/2013	PT therapy/ INR	CGH
03/28/2013	ABO & RH	CGH
03/28/2013	HCG pregnancy	CGH

### Documentation (1)

Date	Name	Source
04/01/2013	OPERATIVE REPORT	CGH

### Imaging (3)

Date	Name	Source
03/29/2013	FLUORO, UP TO ONE HR	CGH
03/29/2013	CHEST, SINGLE VW (A/...	CGH
03/28/2013	ANKLE, COMP., (3 VIEWS)	CGH

### Ambulatory Encounters (1)

Date	Type	Source
06/27/2014	1	CGH

### Medications (5)

Date	Name	Source
06/16/2014	GCN (SIMVASTATIN 0...	PDMP
01/28/2014	GCN (HYDROCODON-...	PDMP
01/28/2014	GCN (LORAZEPAM 1...	PDMP
11/26/2013	GCN (LYRICA 100 MG...	PDMP
09/05/2013	GCN (ZOLPIDEM TAR...	PDMP

### Vitals (2)

Name	Value	Collected
BMI	29	06/02/2014
BLOOD PRESSURE	160/97	06/02/2014

### Readmission Risk



CRISP Training

CRISP Administrator | Change Site | Shared | Logout

results

**Clinical Query Portal Enhancements** – Improvements to the existing clinical query portal including approaches to simplify access, incorporating new content such as access to care profiles, and displaying the patient's providers.



# In-Context Alerting

- In-context alerting is intended to provide key information to clinical decision makers at the most effective point in their clinical workflows.
- An example of an in-context alert is pushing information to a hospital ER when a patient is registered indicating if a care plan is available in CRISP.
- In this In-context alert use case, a pre-defined method to access the care plan (or just key sections such as the care alert) would be established between CRISP and the receiving organization.

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Selected visit

- Acute Pain (338.1)
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Problems (16)

Allergies/Intolerances (1) +

Medications & Fluids Administered +

Home Medications (12) +

Immunizations (0)

D/C Follow-up (1) +

Patient Status Orders

Vital Signs

Last 36 hours for the selected visit

No results found

Measurements and Weights (4)

Selected visit

	Latest	Previous	Change
Weight Dosing	60 kg 04/02/14 14:14	60 kg 04/01/14 18:11	0 kg
Height/Length Dosing	157 cm 04/02/14 14:14	157 cm 04/01/14 18:11	0 cm
BSA Dosing	1.6 m2 04/02/14 14:14	1.6 m2 04/01/14 18:11	0.0 m2
Body Mass Index Dosing	24.34 kg/m2 04/02/14 14:14	24.34 kg/m2 04/01/14 18:11	0.00 kg/m2

Flagged Events (0)

Intake and Output

Last 3 days for the selected visit

No results found

\* Indicates a day without a full 24 hour measurement period

Lines, Tubes, and Drains (0)

RT Vent Measurements

MedStar HIE

Note: No new data has been received for this patient in the last 30 days.

Click Here to view patient in MedStar HIE

Click here for Help/Training

CRISP HIE

Click here to access CRISP

Click here to view CRISP data sources

For CRISP support, call 877-952-7477

Outstanding Tests, Exams (0)

Selected visit

No results found

Diagnostics (0)

Labs

Last 8 days for all visits

No results found

**In-Context Alerting** – inclusive of a range of alert types sent to the point of care or to a care manager that pertains to critical information about a patient, identifies care gaps, indicates post-discharge follow-up care has not occurred, etc



# Care Profile View

## Content Type / Source

## Update Frequency

## Care Profile Repository and Access Point

## Access Methods

Patient Demographics

Daily

Clinical Alert Information

Daily

ENS Subscriber Information

Daily

ADT Data


Daily

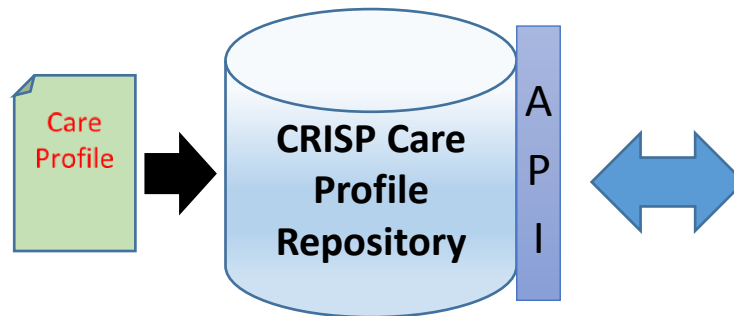
CRS Case Mix Data

Monthly

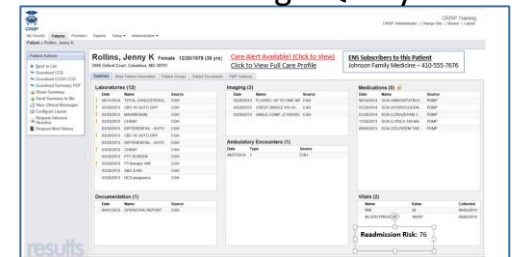
Care Plan Availability Indicator

Daily

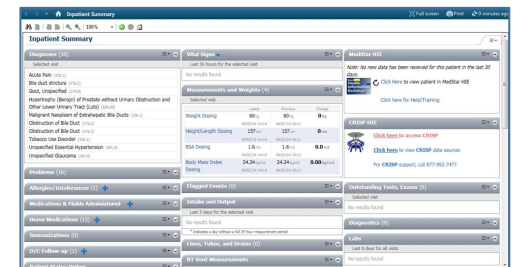
 = to be developed



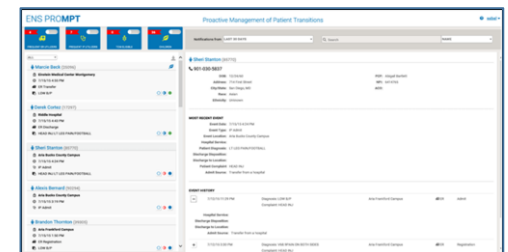
## SSO Access through Query Portal



## API call from EHR



## Link from ENS User Interface

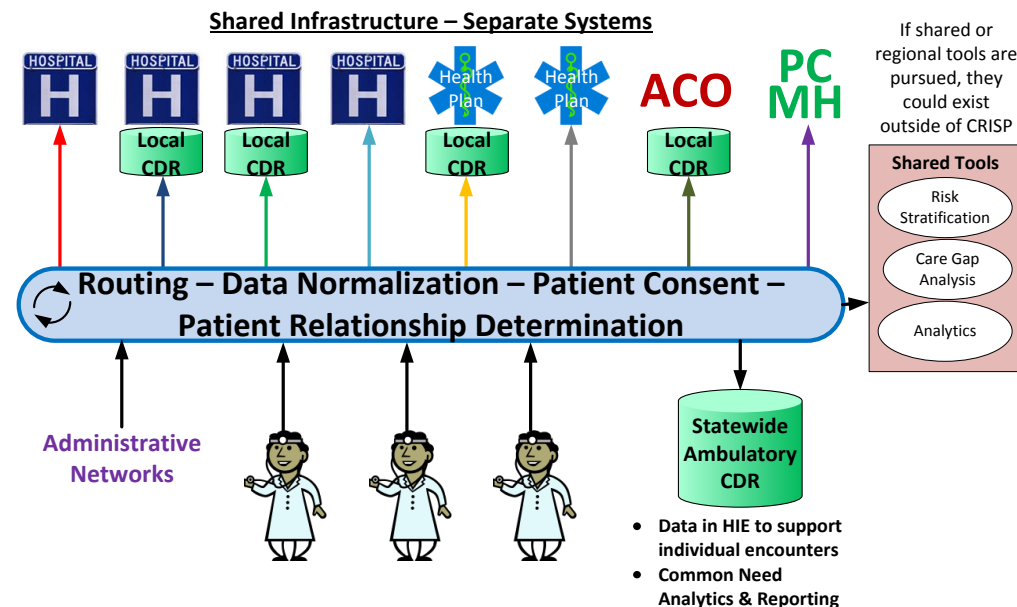




# Data Router and Non-Hospital Connectivity

## Key Functions include:

- Consent management
- Data normalization
- Data routing
- Patient-provider relationships determination and management

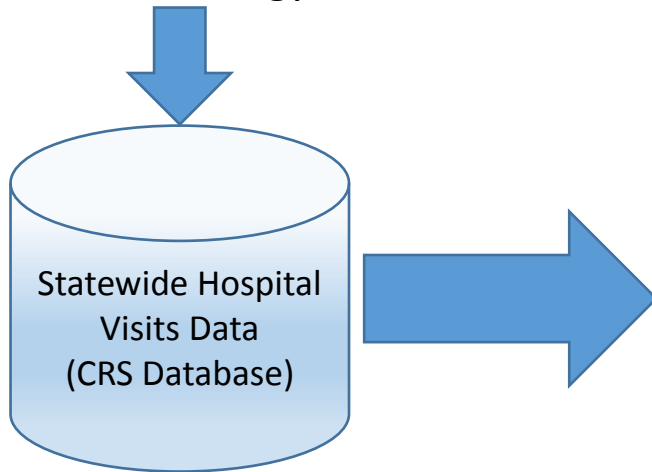


**Data Router** - The router is a service that includes key functionality to support connectivity, consent management, data routing to other services or data consumers, and determine patient-provider relationships. These approaches may rely on connectivity through a health system, through a hosted EHR, directly to the practice, or via an administrative network.



# Standardized Risk Stratification Tools

Risk Stratification  
Methodology



- Standardized and shared risk stratification and predictive modeling tools
- Supporting common understanding high risk patients
- Data feeds to provider care management systems
- Risk scores available through broader set of CRISP tools

**Note:** Over time, additional data, such as Medicare claims data, can supplement the currently available hospital case mix data.

**Standardized Risk Stratification Tools** - deployment of one or more centralized risk stratification methodologies to support stratification of patients initially using HSCRC case mix data housed in CRS but expanding to include broader data sets. Predictive risk score will be shared through a range of tools, including the query portal and ENS.



# Patient Total Hospitalization (PaTH) Dashboard



# Patient Total Hospitalization (PaTH)

- Dashboard incorporating all patient data (formerly called 'All-Patient Report')
  - Visualization of all casemix data with ability to view individual patient utilization data
  - Allows care managers to identify high-risk patients in conjunction with planned or existing coordination programs
- Filters enable a user to focus on a specific population
  - Filter on dates, visits, readmissions, charges, zip codes, MRN, primary payer and age
  - Filter on other hospital used to find patients going to multiple facilities



# Summary Tab: Filters

Hospital Name filter is limited to the user's hospital or hospitals in the user's system

Time Period: Select last 3, 6, or 12 months of data. Data is on a 1-2 months lag from current date

Utilization filters: Apply filters to limit the population to patients with selected utilization criteria at the user's hospital in the selected time period

MRN: Type in an MRN number or paste a list of MRNs of interest

Zip is the zip code of patient residence on the most recent visit. Type in a zip code or paste a list of predefined codes

Primary Payer: filter of the primary payer on the most recent patient visit

Secondary Payer: filter of the secondary payer on the most recent patient visit. Use with Primary Payer to filter for Dual-Eligibles

Hospital Name: [Dropdown]

Time Period: [Last 3 Months]

Total Charges: \$75 - \$417,602

Total Visits: 1 - 14

Readmissions: 0 - 5

Ambulatory ER Visits: 0 - 14

Bedded Care (IP + Obv>=24 hrs): 0 - 7

MRN: [Text Input]

Zip on Recent Visit: [Text Input]

Primary Payer: [All]

Secondary Payer: [All]

Age Group: [All]

High Utilizers Across All Hospitals: [All Population]

Conditions

Chronic

Asthma: [All]

COPD: [All]

Chronic Kidney Disease: [All]

Diabetes: [All]

Heart Failure: [All]

Hyperlipidemia: [All]

Hypertension: [All]

Mental Health

Alzheimers/Other Dementia: [All]

Depression: [All]

Oncology

Colorectal Cancer: [All]

Endometrial Cancer: [All]

Female Breast Cancer: [All]

Lung Cancer: [All]

Prostate Cancer: [All]

Anemia: [All]

Condition filters limit the population to patients with a selected condition. Each filter has 3 options:

- All: All patients are presented whether or not they have this condition
- Condition Present: only patient with this condition are shown. If multiple filters have this selection, only patient with all selected conditions are presented (e.g. patient with both asthma and diabetes)
- Condition Not Present: only patient who do not have this condition are presented (e.g. patients who have never had diabetes)

Age Group: based on age of the patient at the last visit

High Utilizers: This filter selects patients with 3 or more visits across all hospitals and at least one visits at the user's hospital. Unlike the Utilization filters above that only focus on the user's hospital, this filter looks across all hospitals. Choose between:

- 3 or more Inpatient/Observation>=24 hrs
- 3 or more ER visits



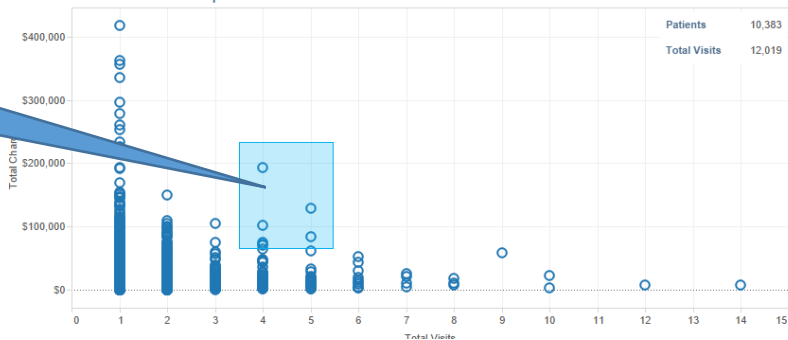


# PaTH Tab: Navigation



## Patent Total Hospitalizations Dashboard - Patients by Visits and Charges All Population

Last 3 Months Patients by Visits and Charges  
Select one or more bubbles to view patient details



Hospital Name:

Time Period:

Total Charges:

Total Visits:

Readmissions:

Ambulatory ER Visits:

Conditions:

Asthma:

COPD:

Chronic Kidney Disease:

Diabetes:

Heart Failure:

Hyperlipidemia:

Hypertension:

Mental Health:

Alzheimers/Other Dementia:

Select bubbles to get more detail on patients

Use filters to select population of interest

Visit totals are displayed for selected patients

Last 12 Months Patient Details:

EID	Total Charges	Total Visits	Visits IP	Visits OBV	Visits ER	Bedded Care	Age
\$158,466	13	10	0	3	10	50	
\$157,889	6	6	0	0	6	72	
\$86,705	8	6	1	1	7	53	
\$78,282	5	5	0	0	5	57	
\$70,551	4	2	0	2	2	23	
\$82,609	6	5	0	1	5	58	
\$83,505	5	5	0	0	5	29	
\$192,912	4	3	0	1	3	24	
\$102,064	4	3	0	1	3	25	

Current Hospital

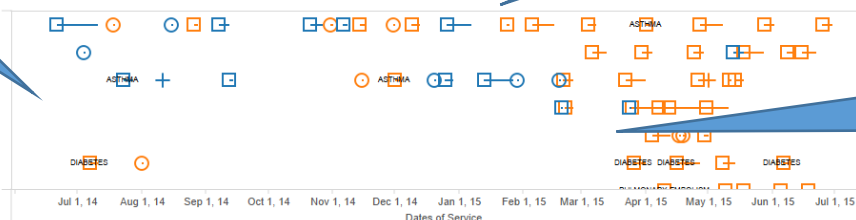
All Hospitals Total

Total Charges	Total Visits	Total Hospitals
\$253,788	19	2
\$167,693	8	2
\$147,757	16	3
\$86,052	7	2
\$70,551	4	1
\$82,609	6	1
\$83,505	5	1
\$358,551	6	2
\$102,064	4	1

Click on EID row to navigate to the Patient Detail tab to see visit level detail for each patient

Visits timeline shows progressions of care for selected patients

Last 12 Months Patient Hospital Utilization Timeline Across All Hospitals  
Select EID to view hospitalizations details



Hover over each shape to see the detail for each visit, such as primary diagnosis and DRG



# Patient Detail Tab: Components

Main table displays a list of visits for selected patient with detailed information for each visit

Filter and sort options show visits by Admit Date, Visit Type or Hospital

More link provides diagnoses descriptions



## Patient Total Hospitalizations - Patient Detail Sorted by Admit Date Inpatient, Observation, and Emergency Department Services at All Hospitals

Hover over More link on the right to view diagnoses descriptions

Time Period  
Last 12 Months

Sort By  
Admit Date

Hospital Name  
Multiple Values

Visit Type  
All

Conditions

Chronic Obstructive Pulmona  
Chronic: Asthma  
Chronic: Chronic Kidney Dise  
Chronic: Diabetes  
Chronic: Heart Failure  
Chronic: Hyperlipidemia  
Chronic: Hypertension  
Mental Health: Depression  
Other: Anemia

Patient Total at This Hospital

Total Charges	\$86,705
Visits IP	6
Visits OBV	1
Visits ER	1
Bedded Care	7
Total Visits	8
Readmissions	5
Age	53

Patient Total at All Hospitals

Total Charges	\$147,757
Total Visits	16
Total Hospitals	3
Zip on Last Visit	20747

Primary Payer  
Medicare fee for service  
Secondary Payer  
Medicaid fee for service

Click here for extended notes

Conditions view lists all conditions for the patient

Patient Total at This Hospital summarizes patient visits at the user's hospital

Patient Total at All Hospitals summarizes patient visits at all the hospitals

Primary and secondary payers on the most recent visit

Link to additional notes



## Questions / Discussion